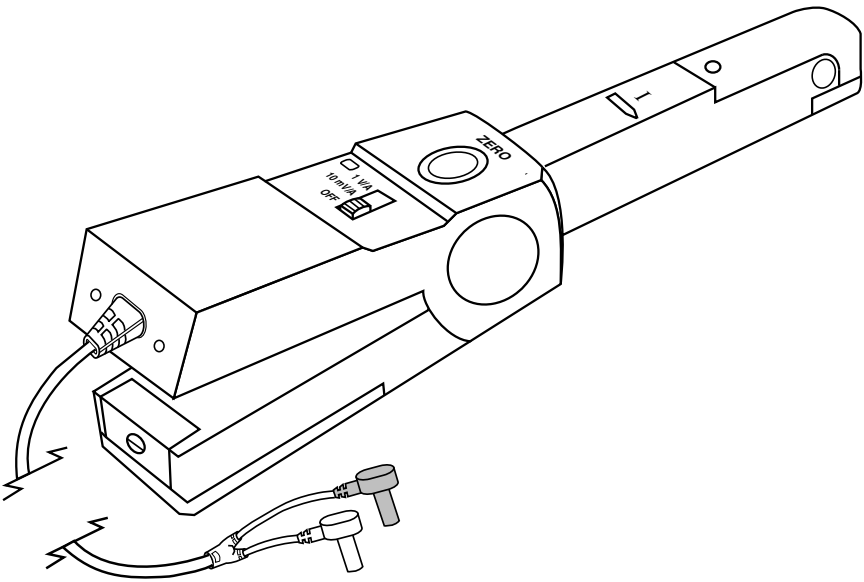
AC/DC Current Probe
Model SL206

USER MANUAL



AEMC®

Quality AEMC Products Online at: www.GlobalTestSupply.com sales@GlobalTestSupply.com

Statement of Compliance

Chauvin Arnoux®, Inc. d.b.a. AEMC® Instruments certifies that this instrument has been calibrated using standards and instruments traceable to international standards.

We guarantee that at the time of shipping your instrument has met its published specifications.

An NIST traceable certificate may be requested at the time of purchase, or obtained by returning the instrument to our repair and calibration facility, for a nominal charge.

The recommended calibration interval for this instrument is 12 months and begins on the date of receipt by the customer. For recalibration, please use our calibration services. Refer to our repair and calibration section at **www.aemc.com.**

Serial #: _____

Catalog #: **1201.45**

Model #: **SL206**

Please fill in the appropriate date as indicated:

Date Received: _____

Date Calibration Due: _____

AEMC® INSTRUMENTS

Chauvin Arnoux®, Inc.
d.b.a AEMC® Instruments
www.aemc.com

Quality AEMC Products Online at: www.GlobalTestSupply.com sales@GlobalTestSupply.com

Limited Warranty

The AC/DC Current Probe Model SL206 is warranted to the owner for a period of 1 year from the date of original purchase against defects in manufacture. This limited warranty is given by AEMC® Instruments, not by the distributor from whom it was purchased. This warranty is void if the unit has been tampered with, abused or if the defect is related to service not performed by AEMC® Instruments.

For full and detailed warranty coverage, please read the Warranty Coverage Information, which is attached to the Warranty Registration Card (if enclosed) or is available at www.aemc.com. Please keep the Warranty Coverage Information with your records.

What AEMC® Instruments will do:

If a malfunction occurs within the one-year period, you may return the instrument to us for repair, provided we have your warranty registration information on file or a proof of purchase. AEMC® Instruments will, at its option, repair or replace the faulty material.

YOU CAN NOW REGISTER ONLINE AT:
www.aemc.com

Warranty Repairs

First, request a Customer Service Authorization Number (CSA#) by phone or by fax from our Service Department (see address below), then return the instrument along with the signed CSA Form. Please write the CSA# on the outside of the shipping container. Return the instrument, postage or shipment pre-paid to:

Chauvin Arnoux®, Inc. d.b.a. AEMC® Instruments
15 Faraday Drive • Dover, NH 03820 USA
Tel: (800) 945-2362 (Ext. 360)
(603) 749-6434 (Ext. 360)
Fax: (603) 742-2346 or (603) 749-6309
repair@aemc.com

Caution: To protect yourself against in-transit loss, we recommend you insure your returned material.

NOTE: All customers must obtain a CSA# before returning any instrument.

Quality AEMC Products Online at: www.GlobalTestSupply.com sales@GlobalTestSupply.com

Table of Contents

Warning 3
Limited Warranty 3
Warranty Repairs 3
International Electrical Symbols 3
Definition of Measurement Categories 4
Receiving Your Shipment 4
Packaging 4
Compatibility 4
Description 5
Control and Connector Identification 5
Specifications 6
  Electrical Specifications 6
  Mechanical Specifications 7
  Safety Specifications 8
Frequency Response Curves (Typical) 9
Operation 10
  Connection 10
  Zeroing the Probe 10
  Current Measurement 11
Maintenance 11
  Warning 11
  Cleaning 11
  Battery Replacement 11
Repair and Calibration 12
Technical and Sales Assistance 12

Quality AEMC Products Online at: www.GlobalTestSupply.com sales@GlobalTestSupply.com

⚠ Warning ⚠

These safety warnings are provided to ensure the safety of personnel and proper operation of the instrument.

- Connect the probe to the oscilloscope or voltage measuring instrument before clamping the probe around a conductor.
- NEVER use the probe on circuits rated higher than 600V.
- NEVER leave the probe clamped around a conductor while it is not connected to a voltage measuring instrument or DMM.
- Carefully center the conductor inside the probe jaws and ascertain that the probe is perpendicular to the conductor before closing the jaws.
- AVOID, if possible, the proximity of other conductors which may create noise.
- Check the magnetic mating surfaces of the probe jaws; these should be free of dirt, rust, or other foreign matter.
- Do not use a probe that is cracked, damaged, or has defective leads.

International Electrical Symbols

This symbol signifies that the instrument is protected by double or reinforced insulation. Use only specified replacement parts when servicing the instrument.

This symbol signifies CAUTION! and requests that the user refer to the user manual before using the instrument.

Risk of electric shock. The voltage at the parts marked with this symbol may be dangerous.

This is a type A current sensor. This symbol signifies that application around and removal from HAZARDOUS LIVE conductors is permitted.

Quality AEMC Products Online at: www.GlobalTestSupply.com sales@GlobalTestSupply.com

Definition of Measurement Categories

CAT I: For measurements on circuits not directly connected to the AC supply wall outlet such as protected secondaries, signal level, and limited energy circuits.

CAT II: For measurements performed on circuits directly connected to the electrical distribution system. Examples are measurements on household appliances or portable tools.

CAT III: For measurements performed in the building installation at the distribution level such as on hardwired equipment in fixed installation and circuit breakers.

CAT IV: For measurements performed at the primary electrical supply (<1000V) such as on primary overcurrent protection devices, ripple control units, or meters.

Receiving Your Shipment

Upon receiving your shipment, make sure that the contents are consistent with the packing list. Notify your distributor of any missing items. If the equipment appears to be damaged, file a claim immediately with the carrier and notify your distributor at once, giving a detailed description of any damage.

Packaging

The AC/DC Current Probe Model SL206 (Cat. #1201.45) is shipped with one 9V battery (not installed) and this user manual.

Compatibility

The AC/DC Current Probe Model SL206 is compatible with any DMM, voltmeter, or other voltage-measuring instrument that has the following features:

- Range and resolution capable of displaying 1mV of input.
- Voltmeter accuracy (uncertainty) of 0.75% or better to take full advantage of the accuracy of the probe.
- Minimum input impedance of 100kΩ (1V/A range) or 10kΩ (10mV/A range).

Quality AEMC Products Online at: www.GlobalTestSupply.com sales@GlobalTestSupply.com

Description

AC/DC Current Probe Model SL206 measures low DC or AC from 10mA to 80ADC, 60AAC. This battery-powered clamp-on probe may be used with digital multimeters, voltmeters, or other voltage-measuring instruments. The probe jaws clamp around the conductor under test, allowing current measurements without breaking the circuit. Hall sensor technology senses the magnetic field produced by the current measured, and generates a millivolt DC or AC output signal. The narrow jaw is designed for optimum use in crowded wiring in industrial and automotive environments.

Control and Connector Identification

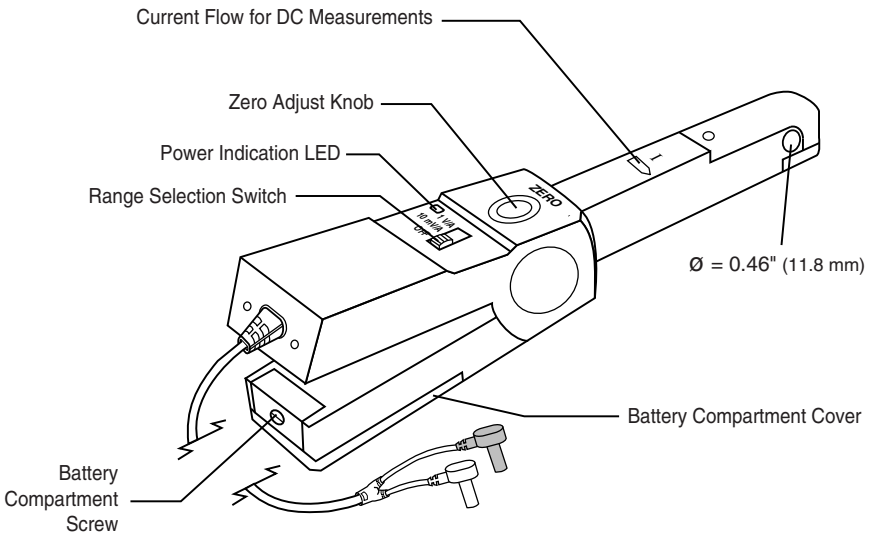


Figure 1

Quality AEMC Products Online at: www.GlobalTestSupply.com sales@GlobalTestSupply.com

Specifications

ELECTRICAL SPECIFICATIONS

Current Range: 10mA to 80ADC; 50mA to 60AAC

Output Signal: 1mV/mA and 10mV/AAC/DC

Accuracy and Phase Shift*:

Range	1mV/mA (1V/A)	10mV/A
Current Range(1)	10mA to 2ADC 10mA to 1.5AAC	50mA to 80A
Output Signal	1V at 1AAC/DC	1V at 100AAC/DC
Accuracy % of Reading	2% of Reading ± 5mA	50mA to 50ADC: 4% of R ± 20mA 50mA to 40AAC: 4% of R ± 20mA 50 to 80ADC: ±12% of R 40 to 60AAC: ±12% of R
Frequency Range	DC to 2kHz	DC to 8kHz
Phase Shift	DC to 65Hz: 1°	DC to 65Hz: 1°
Load Impedance	100kΩ min	10kΩ min
Noise	DC to 1Hz: 1.5mV 1Hz to 10kHz: 14mV 10 to 100kHz: 18mV	DC to 1Hz: 15µV 1Hz to 10kHz: 140µV 10 to 100kHz: 180µV

(1) The maximum permitted value is only limited by the cross section of the primary conductor. Saturation of the magnetic core of the clamp occurs, which is not dangerous. A high residual magnetism may remain which can be eliminated by demagnetizing the clamp.

Overload: 120A continuous

Working Voltage: 600Vrms max

Common Mode Voltage: 600Vrms max

Battery: 9V alkaline (NEDA 1604A, IEC 6LR61)

Battery Life: 68 hours typical

Typical Consumption: 6mA

Low Battery: Green LED when ≥6.5V

Quality AEMC Products Online at: www.GlobalTestSupply.com sales@GlobalTestSupply.com

MECHANICAL SPECIFICATIONS

Operating Temperature:
32° to 122°F (0° to 50°C)

Storage Temperature:
-22° to 176°F (-30° to 80°C)

Temperature Influence:
< 0.2% per °C

Operating Relative Humidity:
10° to 30°C: 85% ± 5% RH
(without condensation)
40° to 50°C: 45% ± 5% RH
(without condensation)

Maximum Cable Diameter:
0.46" (11.8mm)

Zero Adjustment:
20 turn potentiometer (±1.5A min)

Handle:
Lexan® 920 A, UL 94 V2

Case Protection:
IP20 per IEC 529

Drop Test:
1.0 m on 38mm of oak on concrete;
test according to IEC 1010

Mechanical Shock:
100G, test per IEC 68-2-27

Vibration:
Test per IEC 68-2-6,

Frequency Range:
10Hz to 55Hz, Amplitude: 0.15mm

Dimensions:
9.09 x 1.42 x 2.64" (231 x 36 x 67mm)

Quality AEMC Products Online at: www.GlobalTestSupply.com sales@GlobalTestSupply.com

Weight:
11.6 oz (330g) with battery

Color:
Dark gray

Output:
Double insulated 5 ft (1.5m) lead with safety banana plugs

SAFETY SPECIFICATIONS

Electrical:

600V Category III, Pollution: 2

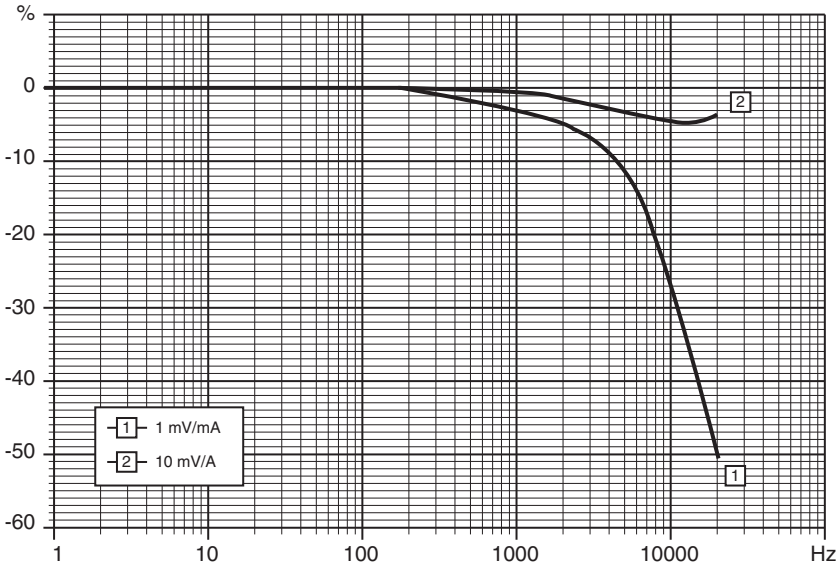
Double insulation or reinforced insulation between primary or secondary and outer case of handle per IEC 1010-2-32

Electromagnetic Compatibility

EN 50081-1 Class B
EN 50082-2 Electrostatic discharge IEC 1000-4-2
Radiated field IEC 1000-4-3
Fast transients IEC 1000-4-4
Magnetic field at 50/60 Hz IEC 1000-4-8

Quality AEMC Products Online at: www.GlobalTestSupply.com sales@GlobalTestSupply.com

Frequency Response Curves (Typical)



Quality AEMC Products Online at: www.GlobalTestSupply.com sales@GlobalTestSupply.com

Operation

Connection

Connect the current probe to the multimeter or other instrument. Be sure to observe the polarities: red = positive terminal, black = common terminal. The Current Probe Model SL206 has a dual output, DC V output in DC and AC V output in AC. The “1V/A” range has an output signal of 1mV/mA AC/DC with an output of 2 volts representing 2 amps present in the conductor being measured. The “10mV/A” range has an output signal of 10mV/A AC/DC with an output of 500 millivolts representing 50 amps present in the conductor being measured. Select the multimeter range which best corresponds to the measured current. For better reading stability, you may use the DMM 2 Volt range and let the probe “warm-up”, for one minute before zeroing.

Zeroing the Probe

When the Current Probe Model SL206 has been used for a current measurement and then removed from the conductor, a small amount of residual magnetism often remains in the core. This residual magnetism will cause the voltmeter to show a small DC reading even though there is no current passing through the jaws of the probe. The residual magnetism should not cause a problem for AC current measurement because the AC voltage function in most multimeters is AC coupled. DC offset caused by the residual magnetism will contribute to reading errors, but can be minimized by using the zero adjust knob (see Figure 1) to show a reading of ± a few counts on the multimeter (probe not clamped on a conductor).

There will always be some instability and noise generated by the Hall sensor, the earth magnetic field and environmental noise. This is particularly noticeable on the most sensitive range 1V/A (1mV/mA) where you may have up to 5mV of uncertainty (see accuracy) which cannot be “zeroed out”. “Zero” the probe while it is connected to the DMM and on the range to be used. Let the probe “warm-up” for one minute before zeroing. Turn the zero adjust knob until the probe is zeroed.

Quality AEMC Products Online at: www.GlobalTestSupply.com sales@GlobalTestSupply.com

Current Measurement

Select the appropriate range on your multimeter. Zero the probe in DC and in DC coupled AC measurements. Observe the output polarities for DC measurement. Clamp the probe on the conductor to be measured and read the current flowing directly on your meter. The output of the probe is 10mV/A AC/DC or 1mV/mA AC/DC. If your meter indicates a negative reading during DC measurements, this simply means that the current flow is in the opposite direction of the arrow marked “I” on the probe or that the probe connections are reversed (polarity). After measurement, turn the probe off.

Maintenance

⚠ Warning

- For maintenance use only specified replacement parts.
- Avoid electrical shock: do not attempt to perform any servicing unless you are qualified to do so.
- Avoid electrical shock and/or damage to the instrument: do not get water or other foreign agents into the electronic module.
- Also see warning on page 2.

Cleaning

Be sure that mating surfaces of the jaw are free of dirt or foreign matter. If they are rusted, gently clean with a soft, lightly oiled cloth. Do not leave excessive oil residue.

Battery Replacement

When the probe is turned on, the green battery indication LED should light up. If not, replace the 9V battery (see Figure 1). To replace the battery, disconnect the probe from the circuit and the DMM. Turn the probe “OFF”. Unscrew the battery compartment screw and pull out the battery compartment cover. Replace the battery and put the cover back on. Do not replace the battery while probe is in use.

Quality AEMC Products Online at: www.GlobalTestSupply.com sales@GlobalTestSupply.com

Repair and Calibration

To ensure that your instrument meets factory specifications, we recommend that it be submitted to our factory Service Center at one-year intervals for recalibration, or as required by other standards or internal procedures.

For instrument repair and calibration:

You must contact our Service Center for a Customer Service Authorization number (CSA#). This will ensure that when your instrument arrives, it will be tracked and processed promptly. Please write the CSA# on the outside of the shipping container. If the instrument is returned for calibration, we need to know if you want a standard calibration, or a calibration traceable to N.I.S.T. (includes calibration certificate plus recorded calibration data).

Chauvin Arnoux®, Inc.
d.b.a. AEMC® Instruments
15 Faraday Drive
Dover, NH 03820 USA

Tel: (800) 945-2362 (Ext. 360)
(603) 749-6434 (Ext. 360)
Fax: (603) 742-2346 or (603) 749-6309
repair@aemc.com

(Or contact your authorized distributor)

Costs for repair, standard calibration, and calibration traceable to N.I.S.T. are available.

NOTE: All customers must obtain a CSA# before returning any instrument.

Technical and Sales Assistance

If you are experiencing any technical problems, or require any assistance with the proper operation or application of your instrument, please call, mail, fax or e-mail our technical support hotline:

Chauvin Arnoux®, Inc.
d.b.a. AEMC® Instruments
200 Foxborough Boulevard
Foxborough, MA 02035, USA

Phone: (800) 343-1391
(508) 698-2115
Fax: (508) 698-2118
techsupport@aemc.com
www.aemc.com

NOTE: Do not ship Instruments to our Foxborough, MA address

Quality AEMC Products Online at: www.GlobalTestSupply.com sales@GlobalTestSupply.com

Quality AEMC Products Online at: www.GlobalTestSupply.com sales@GlobalTestSupply.com

Chauvin Arnoux®, Inc. d.b.a AEMC® Instruments
15 Faraday Drive • Dover, NH 03820
www.aemc.com

Quality AEMC Products Online at: www.GlobalTestSupply.com **sales@GlobalTestSupply.com**